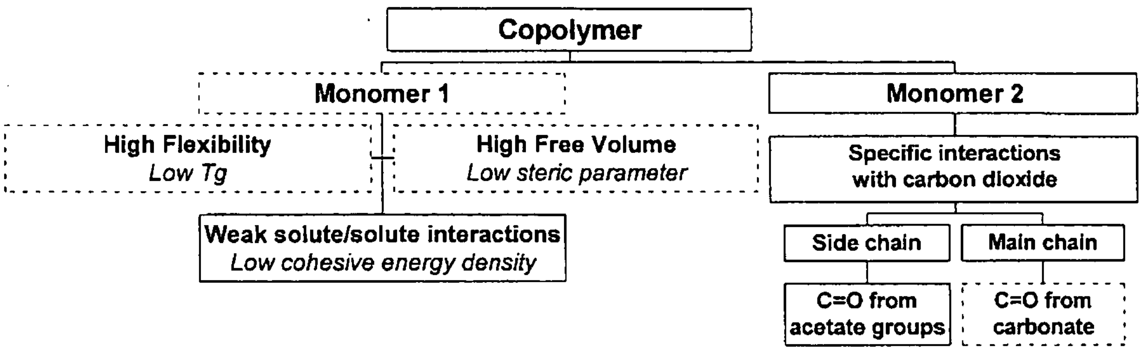


Figure 1. CO_2 –philic material design

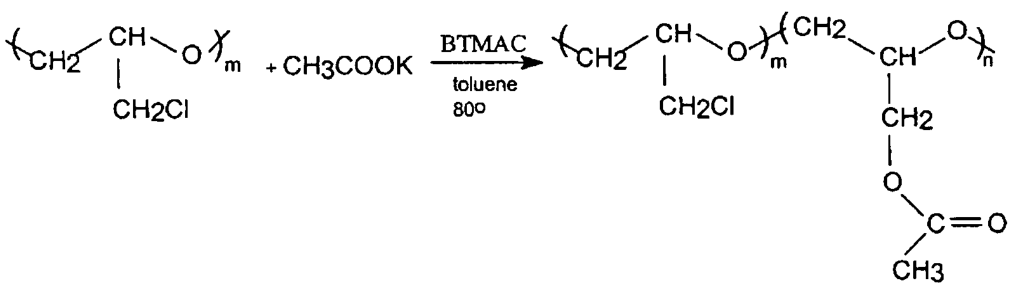


Figure 2. Modification of poly(epichlorohydrin) with acetate groups

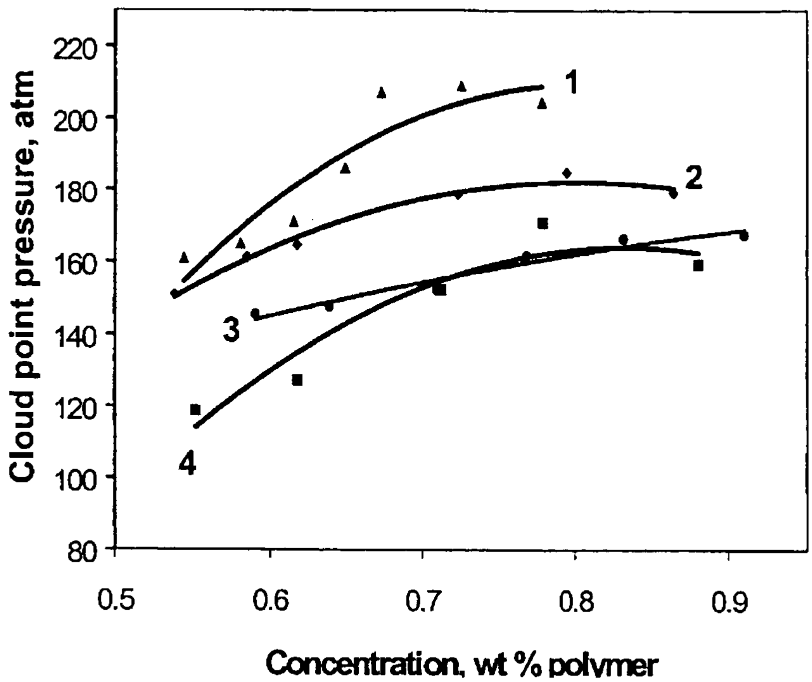


Figure 3. Phase behavior of acetate functionalized epichlorohydrin N = 25 repeat units

1) 33% acetate

2) 40 % acetate

3) PO homopolymer (also 25 repeat units)

4) 45 % acetate

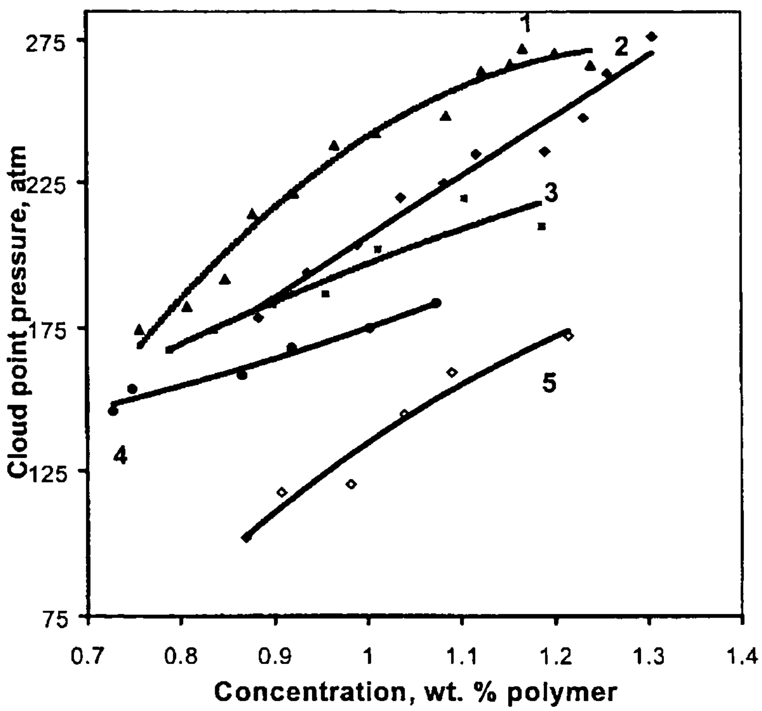


Figure 4. Phase behavior of acetate functionalized poly(epichlorohydrin) N = 7 repeat units

1) Epichlorohydrin homopolymer

2) 28 % acetate

3) 100 % acetate

4) 33 % acetate

5) 38 % acetate

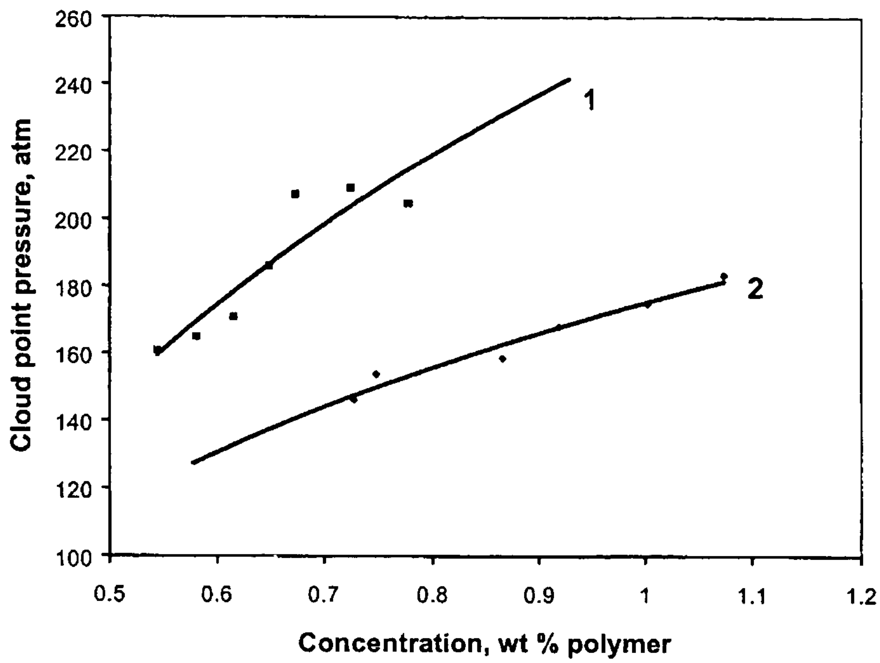
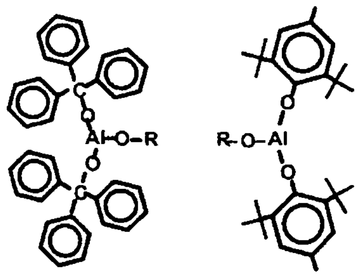


Figure 5. Phase behavior of functionalized poly(epichlorohydrin) with 33 % acetate

1) N = 25 repeat units

2) N = 7 repeat units



1

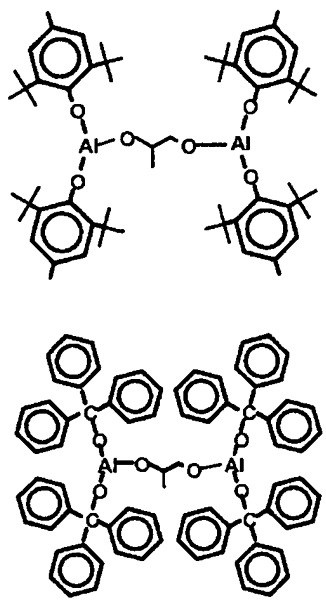


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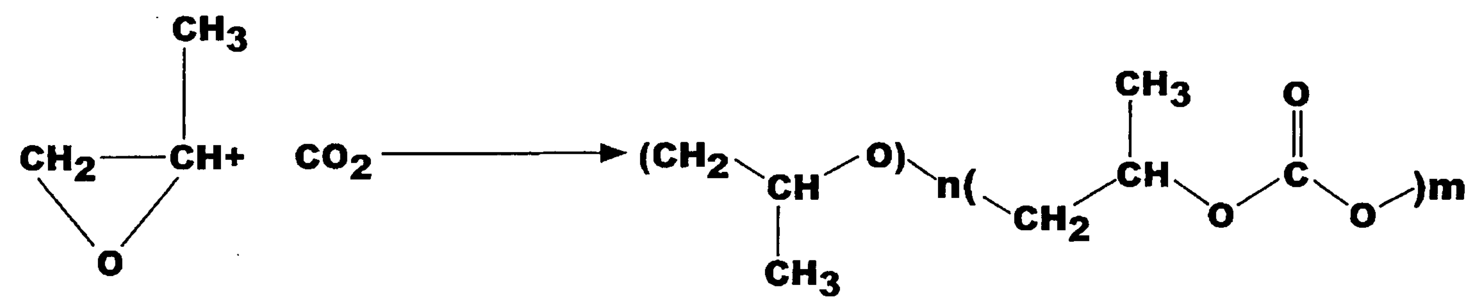
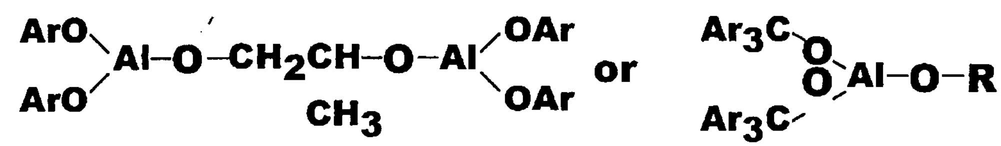
Figure 6. Sterically hindered aluminum catalysts used in the copolymerization of cyclic ethers and carbon dioxide

SYNTHESIS OF PO/CO_2COPOLYMERS



Conditions

Catalysts:



[M]=2-5 mol/l
[Cat]=4-11*10^{-2}mol/l
24 h at 40-60°C

Figure 7

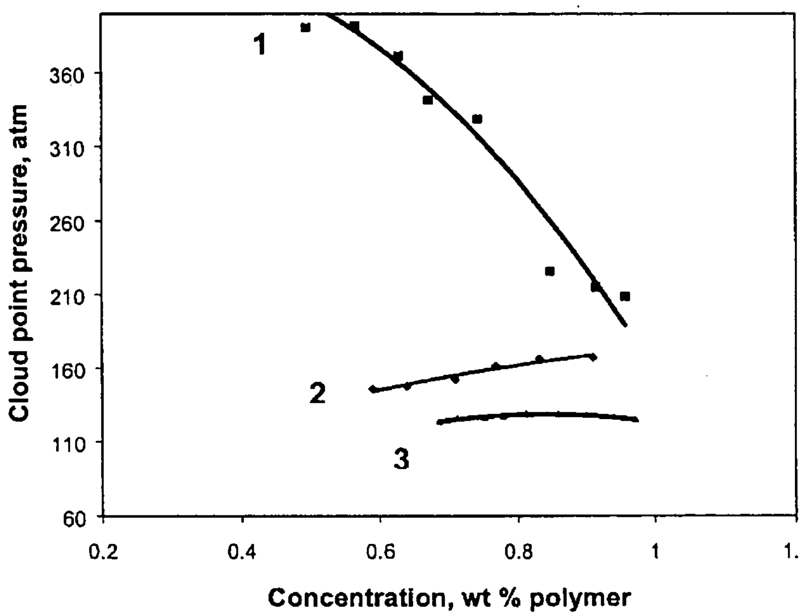


Figure 8. Phase behavior of PO-CO_2 copolymer with N = 25 repeat units

1) PO/CO_2 copolymer 56 % carbonate

2) PO homopolymer

3) PO/CO_2 copolymer 40% carbonate

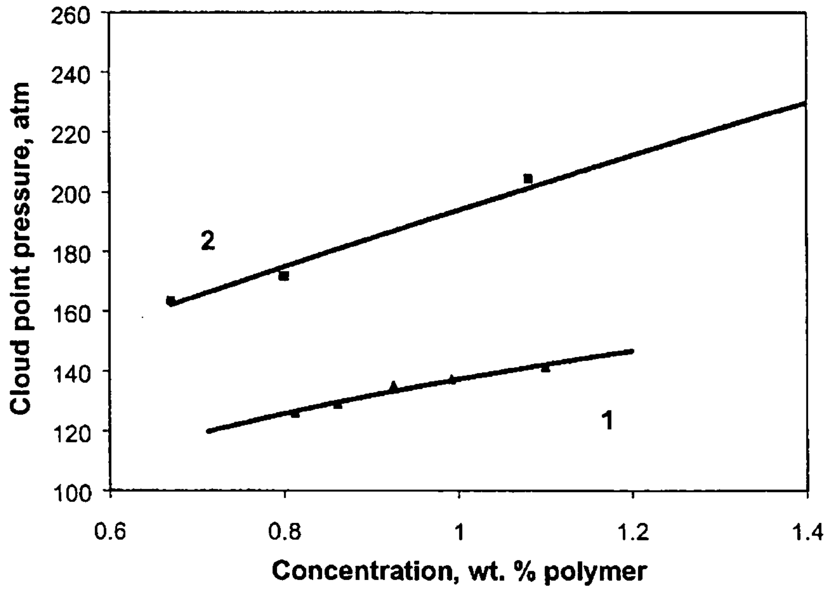


Figure 9. Phase behavior of PO-CO_2 copolymers vs. poly(fluoroether)

1) PO/CO_2 copolymer N = 220 repeat units, 15% carbonate

2) Krytox, N = 176 repeat units (reference 24)

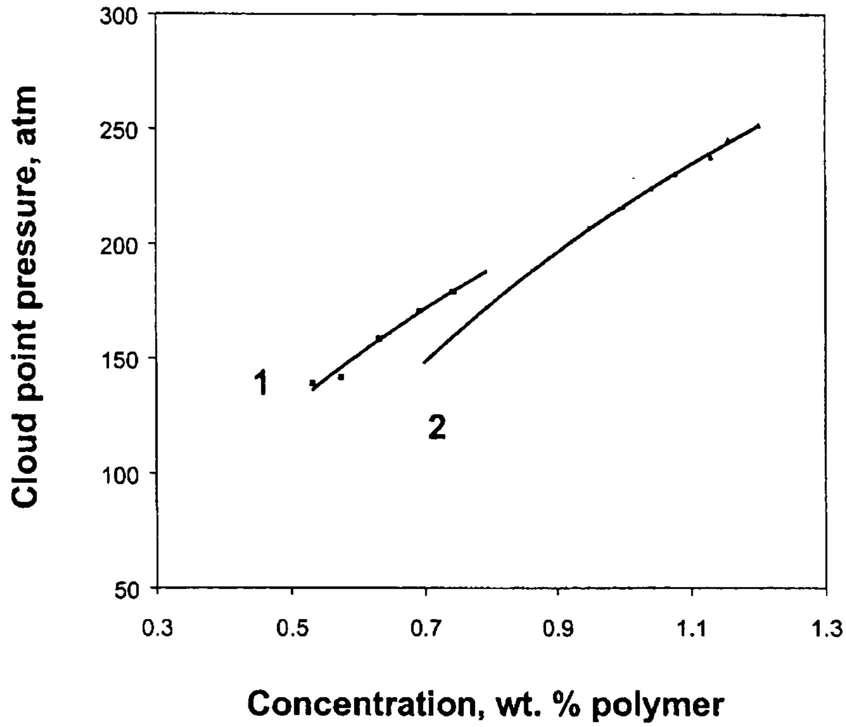


Figure 10. Phase behavior of EO-CO_2 copolymer vs. PEO

1) EO/CO_2 copolymer N = 103; 33.7% carbonate

2) PEO, N = 16

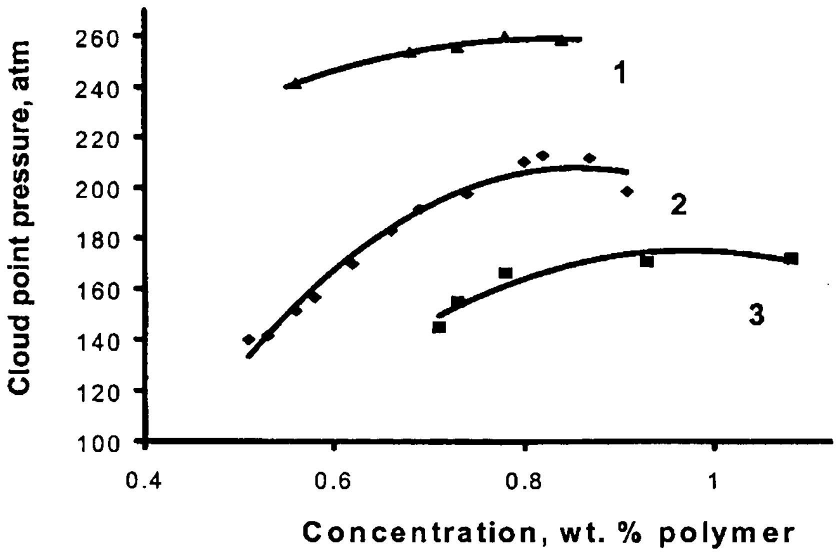


Figure 11. Phase behavior of CHO-CO_2 copolymers with high content of carbonate units

1) 47% carbonate N = 27

2) 40% carbonate N = 20

3) 50% carbonate N =16

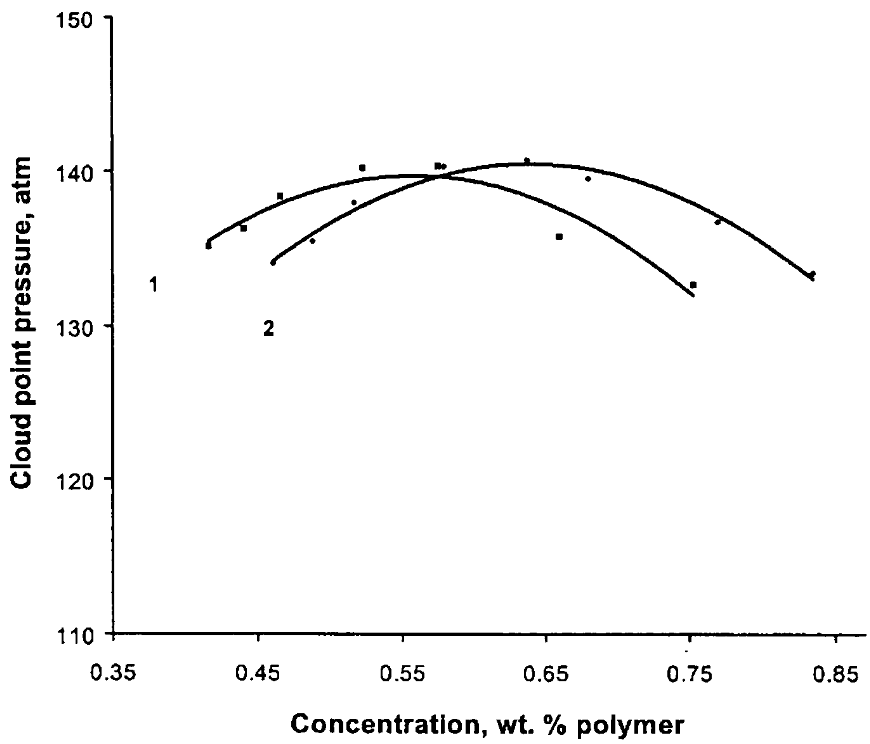


Figure 12. Phase behavior of CHO-CO_2 copolymers with low content of carbonate units

1) 8.8% carbonate N = 124

2) 2.3% carbonate N = 88

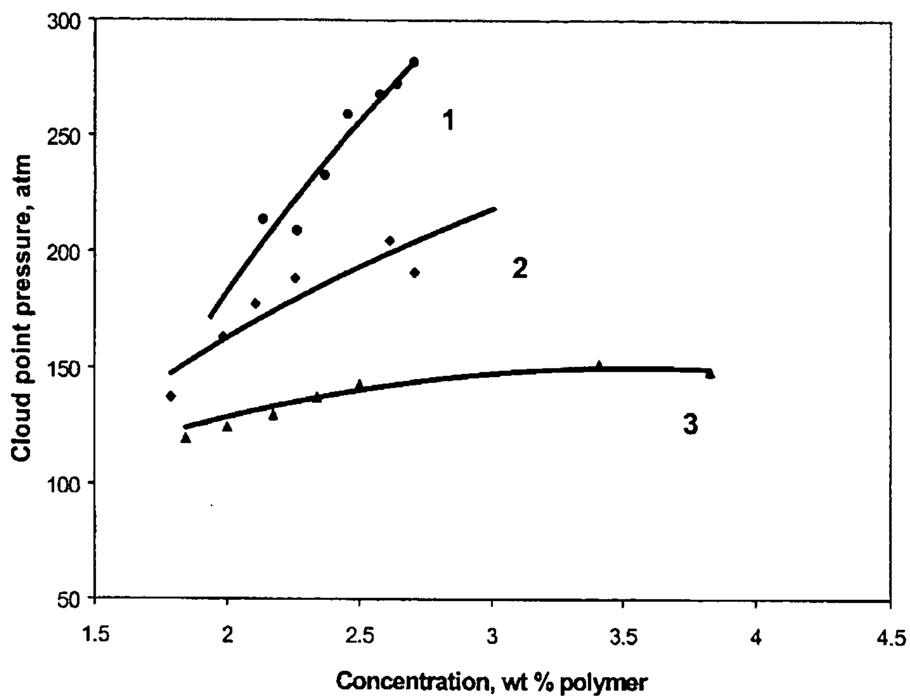


Figure 13. Phase behavior of poly(propylene glycol) diol (1), poly(propylene glycol) monobutyl ether (2) and poly(propylene glycol) acetate (3) with 21 repeat units.

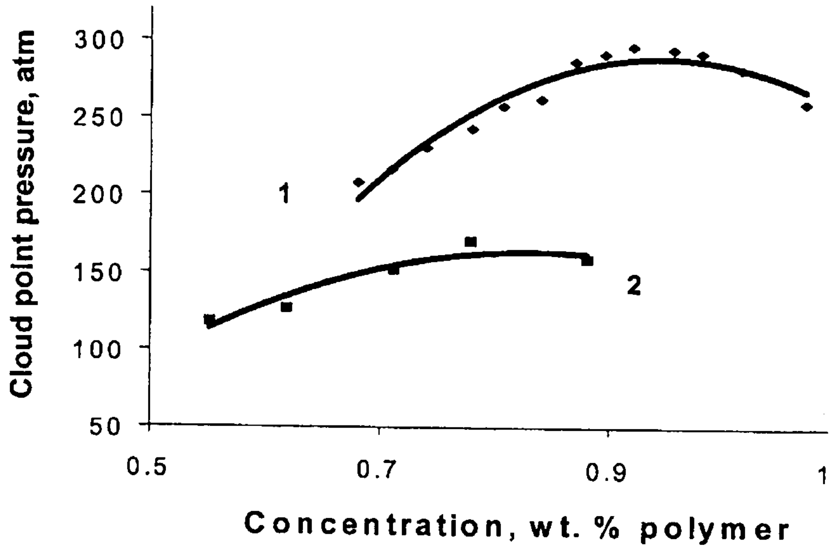


Figure 14. Phase behavior of epichlorohydrin/CO_2 copolymer compared to acetate modified poly(epichlorohydrin)

1) ECH/CO_2 copolymer
N = 17
25 % carbonate

2) Modified PECH
N = 25
45 % acetate

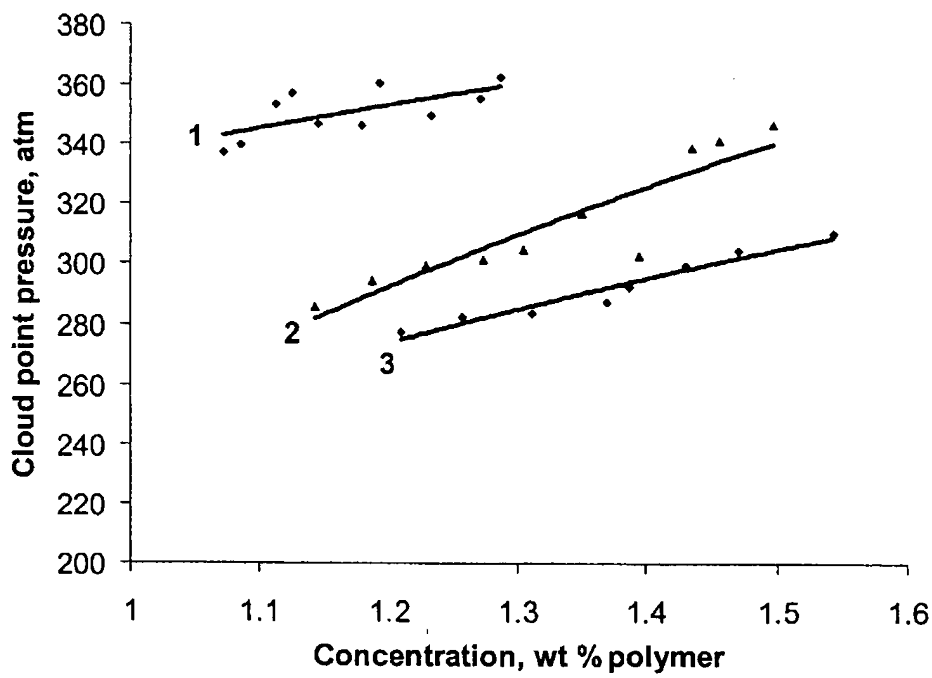


Figure 15. Phase Behavior of Vinyl Acetate and Ethyl Vinyl Ether Homopolymers

1) Poly(Vinyl acetate) with 90 SRU

2) Poly(Ethyl Vinyl Ether) with 20 SRU

3) Poly(Vinyl acetate) with 70 SRU

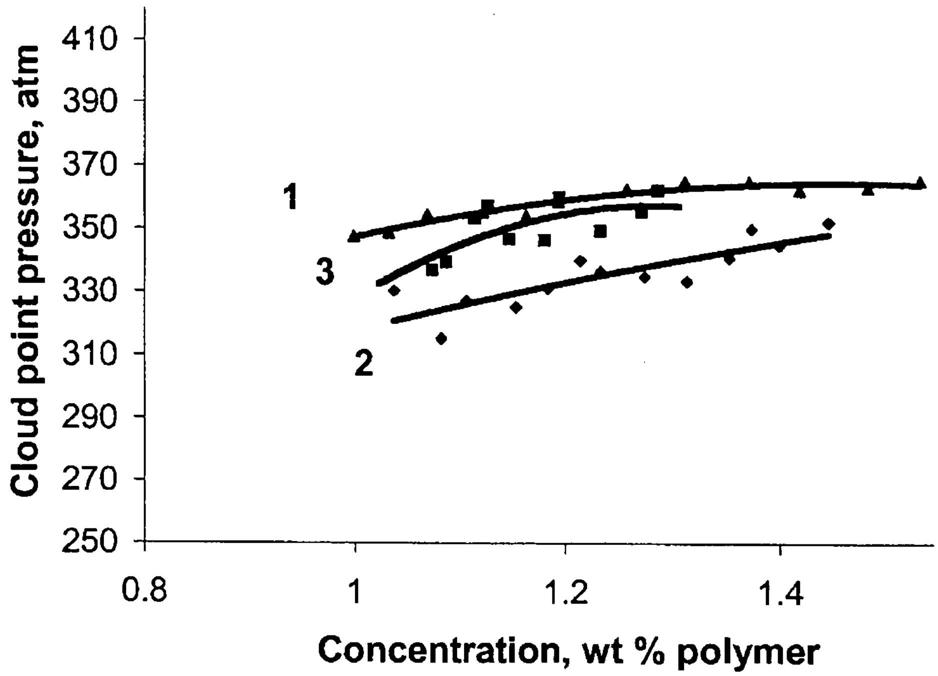


Figure 16. Phase Behavior of Vinyl Acetate/Ethyl Vinyl Ether Copolymers with 90 SRU1) 39.8 % VA

2) 22.4 % VA

3) VA homopolymer

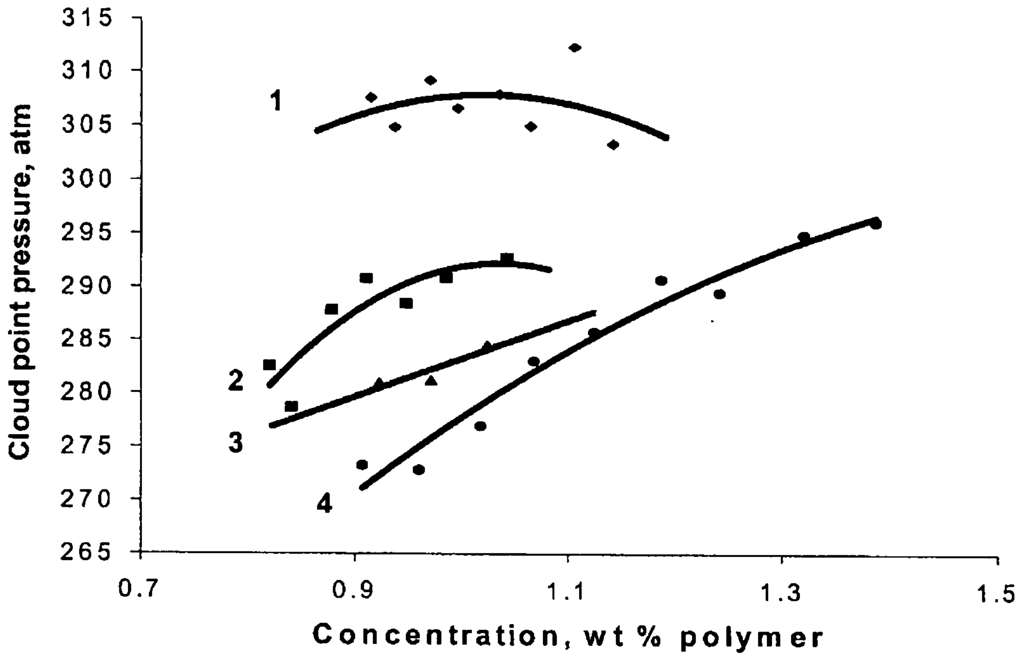


Figure 17. Phase Behavior of Vinyl Acetate/Ethyl Vinyl Ether Copolymers with 70 SRU

1) 67 % VA

2) 63 % VA

3) VA homopolymer

4) 18.47 % VA

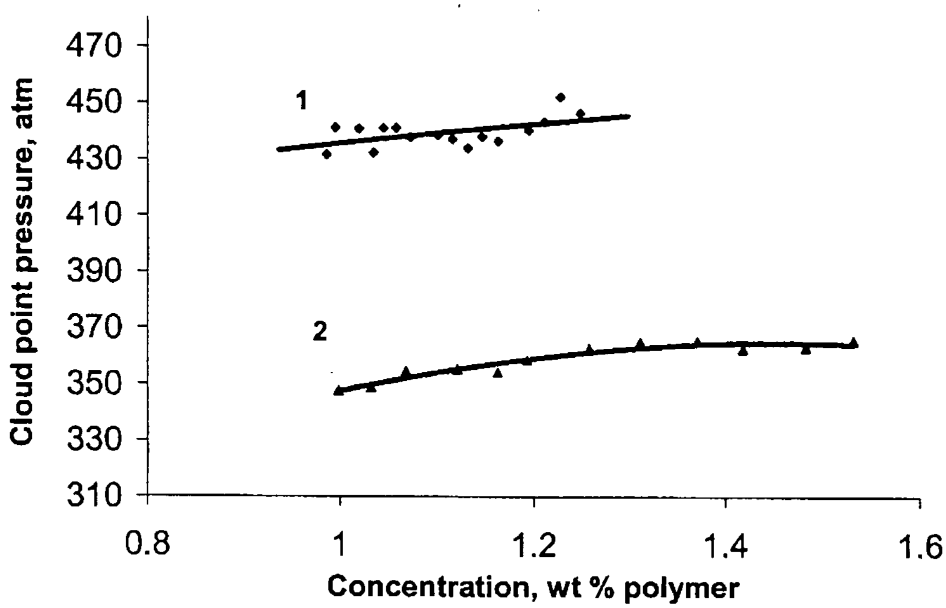
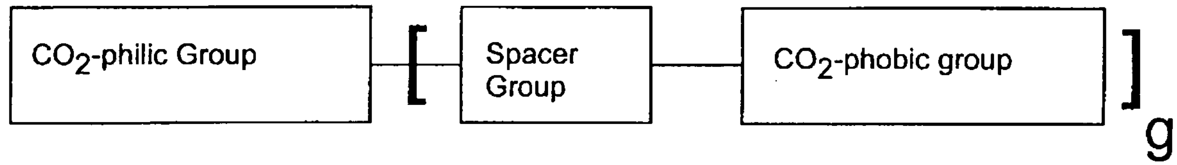


Figure 18. Phase Behavior of Vinyl Acetate/Ethyl Vinyl Ether Copolymers

1) 135 SRU, 46.6 % VA

2) 90 SRU, 39.8 % VA



(Reactive Functional Group)[(Monomer 1)$_x$(Monomer 2)$_y$](End Group)

Figure 19